## REMARKS/ARGUMENTS

Claims 1, 6-7, 10-11 and 13-21 have been resubmitted. Claims 1, 10-11, 13, 15 and 19 have been amended. Claims 2-5, 8-9, 12 and 14 have been canceled.

The Examiner has rejected claims 1-8 and 10-19 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner has also rejected claims 1-8, 10-17 and 19 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner has rejected claims 1, 4, and 13 under 35 U.S.C. §102(b) as being anticipated by Stiles et al. Claims 1, 3, 5, 8 and 14 are also rejected under 35 U.S.C. §102(b) as being anticipated by Suzuki et al. Claims 1 and 2 have further been rejected under 35 U.S.C. §102(b) as being anticipated by JP 07-000743. The Examiner has also rejected claims 1, 4, 6-8, 10 and 12-17 under 35 U.S.C. §102(b) as being anticipated by Cole. Finally, the Examiner has rejected claims 11-12 and 18-21 under 35 U.S.C. §103(a) as being unpatentable over Cole.

Examiner Interview

Applicants would like to thank the Examiner for courtesies extended to Applicants' representatives during a telephone interview on March 10, 2004. The rejections of the claims under §112, §102 and §103 were discussed. No agreement was reached, but the Examiner agreed to consider the arguments more fully when reviewing this amendment and response. Those arguments are presented below.

35 U.S.C. §112

Claims 1 and 19 have been amended to remove the phrase "without desorption" and thus rendering the rejection moot.

Applicants have also amended claim 15, replacing the phrase "allowing the catalyst to be used in a different environment than the alkali" with the phrase "allowing the catalyst to be operated under conditions different than the alkali." The basis for this amendment can be found in the specification, specifically at page 7, lines 3-5. Applicant thus submits that amended claim 15 is definite and complies with the written description requirement.

Therefore, withdrawal of the rejections under 35 U.S.C. §112, first and second paragraphs, is respectfully requested.

Stiles et al.

The Stiles reference discloses a system for removing NOx from a gas having a catalyst-adsorbent for adsorbing and then desorbing the NOx and, downstream from the adsorbent, a *reducing* catalyst for reducing the NOx to elemental nitrogen and water. Col. 4, line 67 to col. 5, line 9; Figure 3. The catalyst-adsorbent has, as a catalyst, a metal oxide, preferably manganese oxide, *and* aluminum oxide, co-precipitated together. The adsorbent is an alkali coated onto the metal oxide/aluminum oxide catalyst. The Stiles reference does not disclose, teach or suggest that the aluminum oxide or a suitable substitute can be removed from the catalyst of the catalyst-adsorbent material. The substitute materials for the alumina can be silica, thoria, magnesia, calcia, stontia, titania, ziconia, stania, or baria or their mixtures or the lanthanides. Col. 6, lines 22-25.

In an effort to expedite prosecution of this case, but in no way conceding to the validity of the rejection, Applicants have amended claim 1 such that the

catalyst consists of manganese dioxide and copper oxide. Basis for this amendment can be found on page 2, line 23 to page 3, line 5 of the specification. In contrast to the catalyst-adsorbent of the Stiles reference, the present invention claims a catalyst for converting NO to $NO_2$ that *consists of* manganese dioxide and copper oxide, excluding aluminum oxide or a suitable substitute as disclosed by the Stiles reference. For a reference to anticipate a claim, it must disclose every element of that claim. Applicants submit that the Stiles reference does not anticipate the present claimed invention as it does not disclose, suggest or teach a catalyst consisting of manganese dioxide and copper oxide alone. Applicants therefore respectfully requests withdrawal of the rejection.

Suzuki et al.

The Suzuki reference discloses an apparatus having a first noble metal catalyst on a support, a second catalyst on a support, in which the second catalyst adsorbs NOx, and a third noble metal catalyst on a support for converting the NOx desorbed from the second catalyst to elemental nitrogen and water. Col. 2, lines 29-38. The Suzuki reference does not disclose a catalyst that is coated with an alkali.

In an effort to expedite prosecution of this case, but in no way conceding to the validity of the rejection, Applicant has amended claim 1 to include the limitations of claim 4, which was not rejected as anticipated by the Suzuki reference. Amended claim 1 now includes the limitations of coating the alkali onto particles of the catalyst. Amended claim 1 also claims a catalyst consisting of manganese dioxide and copper oxide. In contrast, the Suzuki reference discloses a noble metal catalyst.

Therefore, the Suzuki reference, which does not disclose alkali-coated support particles of a catalyst or a catalyst consisting of manganese dioxide and copper oxide, does not disclose every element of amended claim 1 and thus does not anticipate the claim. Further, the Suzuki reference, either alone or in combination with the other references cited, does not suggest the specific combination recited in claim 1 as amended. Thus, claim 1 as amended defines an invention which is unobvious over Suzuki et al. Withdrawal of the rejection is respectfully requested.

JP 07-000743

JP 07-000743 discloses an adsorbent for removing nitrogen oxide from a gas mixture. The adsorbent has at least one metal oxide *and* an alkali, the adsorbent being on a carrier or support particle.

In contrast, in the system of the present invention, the alkali is coated onto particles of the catalyst. JP 07-00743 does not disclose, teach or suggest that the alkali is coated onto particles of the catalyst, only that both the alkali and catalyst (metal oxide) are present on the same support. Furthermore, amended claim 1 now includes all the limitations of original claim 4, which was not rejected as anticipated by JP 07-000743. Therefore, JP 07-000743 does not disclose every element of amended claim 1. Applicant thus submits that JP 07-00743 does not disclose, teach or suggest the specific combination recited in amended claim 1 and therefore respectfully requests withdrawal of the rejection.

Cole

The Cole reference discloses a system for purifying engine exhaust having an adsorbent for adsorbing NOx, and a three-way catalytic converter

that reduces NOx to elemental nitrogen and water. The adsorbent can be a metal oxide *or* adsorbent materials disclosed by the Stiles reference, such as potassium carbonate. Col. 5, lines 17-29. The Cole reference does not disclose, teach or suggest that the metal oxide be used as a catalyst independent of the adsorbent, or that the metal oxide and potassium carbonate are both necessary. The Cole reference, in fact, states that other materials capable of adsorbing NOx "may also be utilized as the sorbent materials." In contrast, claim 1 requires both a catalyst (i.e., a metal oxide) *and* an alkali as the adsorbent. Moreover, the Cole reference does not disclose, teach or suggest that the metal oxide particles be coated with an alkali, further distinguishing the reference from the claimed invention. Therefore, the skilled artisan, upon reading the Cole reference, would not be motivated to use the metal oxide as a catalyst along with an alkali as an adsorbent.

Furthermore, the catalyst of the Cole reference is a reducing catalyst, reducing NOx to elemental nitrogen and water. In contrast, the present invention comprises an oxidizing catalyst for converting NO to $NO_2$.

Finally, the Examiner believes that it would have been obvious to the skilled artisan to rearrange the catalyst and adsorbent of the Cole reference to produce the present invention. However, it would make no sense to place the *three-way catalytic converter* of the Cole reference upstream of the adsorbent. The catalyst of the Cole reference reduces NOx to elemental nitrogen and water, making the presence of an adsorbent downstream superfluous. Conversely, it would make no sense to place the catalyst of the present invention downstream of the adsorbent. The catalyst of the present invention oxidizes NO to $NO_2$ so that the $NO_2$ will be better adsorbed onto the adsorbent, more efficiently removing nitric oxide from a gas. If the order was reversed, any NO not adsorbed by the adsorbent would be converted to $NO_2$ and released into the gas, defeating the purpose of the claimed system. Applicant thus

submits that the skilled artisan would not be motivated to rearrange the order of the adsorbent and catalyst of the Cole reference to give the present invention.

The Cole reference does not disclose, teach or suggest the system of the present invention comprising a catalyst for reducing NO to $NO_2$ and an alkali for subsequently adsorbing the $NO_2$. Withdrawal of the rejection is therefore respectfully requested.

## CONCLUSION

Reconsideration and withdrawal of the Office Action with respect to claims 1-8 and 10-21 is requested. Applicant submits that the claims are now in condition for allowance or at least in better form for appeal.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

Respectfully submitted,

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